

**Dworshak Power House, Clearwater County, Idaho
PWS #2180009**

SOURCE WATER ASSESSMENT REPORT

**Final Report
January 20, 2001**



**State of Idaho
Department of Environmental Quality**

Disclaimer: This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on the data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for Dworshak Power House, Idaho*, describes the public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within the boundary. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Dworshak Power House drinking water system consists of one intake. Based on State water quality data over the past 8 years, there have been no water quality problems associated with Dworshak Power House. Database research lists 13 mines or mining prospects located upstream of Dworshak Dam primarily along the North Fork of the Clearwater River and its tributaries. According to the Idaho Geological Survey, none of these sites have ever been major mines and none of the sites are currently being mined. Indications are that all 13-mine sites listed are inactive prospects that have not been disturbed for many years. There are two roadway bridges that cross the Dworshak Reservoir located approximately 16 and 41 miles upstream of Dworshak Dam. . One bridge is paved and the other is not paved. Both bridges service relatively low volumes of traffic. Therefore, there is minor potential for a contaminant spill into Dworshak Reservoir from roadway traffic. Big Eddy marina is the only facility at Dworshak Reservoir where boats are moored for extended periods of time. Big Eddy Marina has capacity for up to 100 boats and is usually full during summer months. Petrochemicals could leak from fuel storage tanks at Big Eddy Marina or from boats moored at Big Eddy Marina. If a major petrochemical spill were to occur at Big Eddy Marina during a time that reservoir drawdown caused the Dworshak Power House drinking water intake to be near the reservoir surface, contamination of drinking water could occur.

Reservoir drawdown also results in exposure of barren unvegetated shoreline that is vulnerable to storm events. Overland flow resulting from storm events on unprotected shoreline could cause considerable turbidity at the Dworshak Power House intake. However, the normal period for maximum reservoir drawdown does not coincide with normal high recreational use of the reservoir.

Although Dworshak Power House is located in an area with few threats to water quality this assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Dworshak Power House, source water protection activities should focus on implementation of practices aimed at reducing the effects of turbidity and bacterial sources related to storm water runoff and recreational use within the designated source water areas. Most of the designated areas are outside the direct jurisdiction of the Dworshak Project. Partnerships with state and local agencies should be established and are critical to success. A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Lewiston Regional Office of the Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR DWORSHAK POWER HOUSE, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted.

It is important to review this information to understand what the ranking of this source means. A map showing the delineated source water assessment area, a map showing the entire watershed contributing to the delineated area and the inventory of significant potential sources of contamination identified within the delineated area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description and Source Water Quality

Dworshak Power House, Idaho is a non-community non-transient system serving approximately 25 or more people per day depending on recreational seasonal use, located in the Dam on Dworshak Reservoir, Clearwater County, Idaho (Figure 1). The public drinking water system for Dworshak Power House is comprised of one drinking water intake. Area terrain is generally steep and rugged and covered with trees. The actual data used by DEQ in determining source water assessment delineation areas are available upon request.

The primary water quality issue currently facing Dworshak Power House is recreational boating, transportation of hazardous materials on proximal roadways and bridges and possible contamination related to past mineral exploration and the problems associated with managing these potential sources of contamination. In recent years surface water intakes in the drinking water system have not encountered any water quality problems.

Defining the Zones of Contribution - Delineation

To protect surface water systems from potential contaminant pathways, the EPA requires that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b). This process included mapping the boundaries of the zone of contribution into Dworshak Reservoir in its entirety to include the North Fork of the Clearwater River. Stream velocity for time of travel estimates was calculated using the mean annual daily discharge. A 500-foot buffer on either side of major stream segments was used to identify major sources of contamination such as aboveground storage tanks, National Pollutant Discharge Elimination System (NPDES) discharge sites, and Resource Conservation Recovery Act (RCRA) facilities.

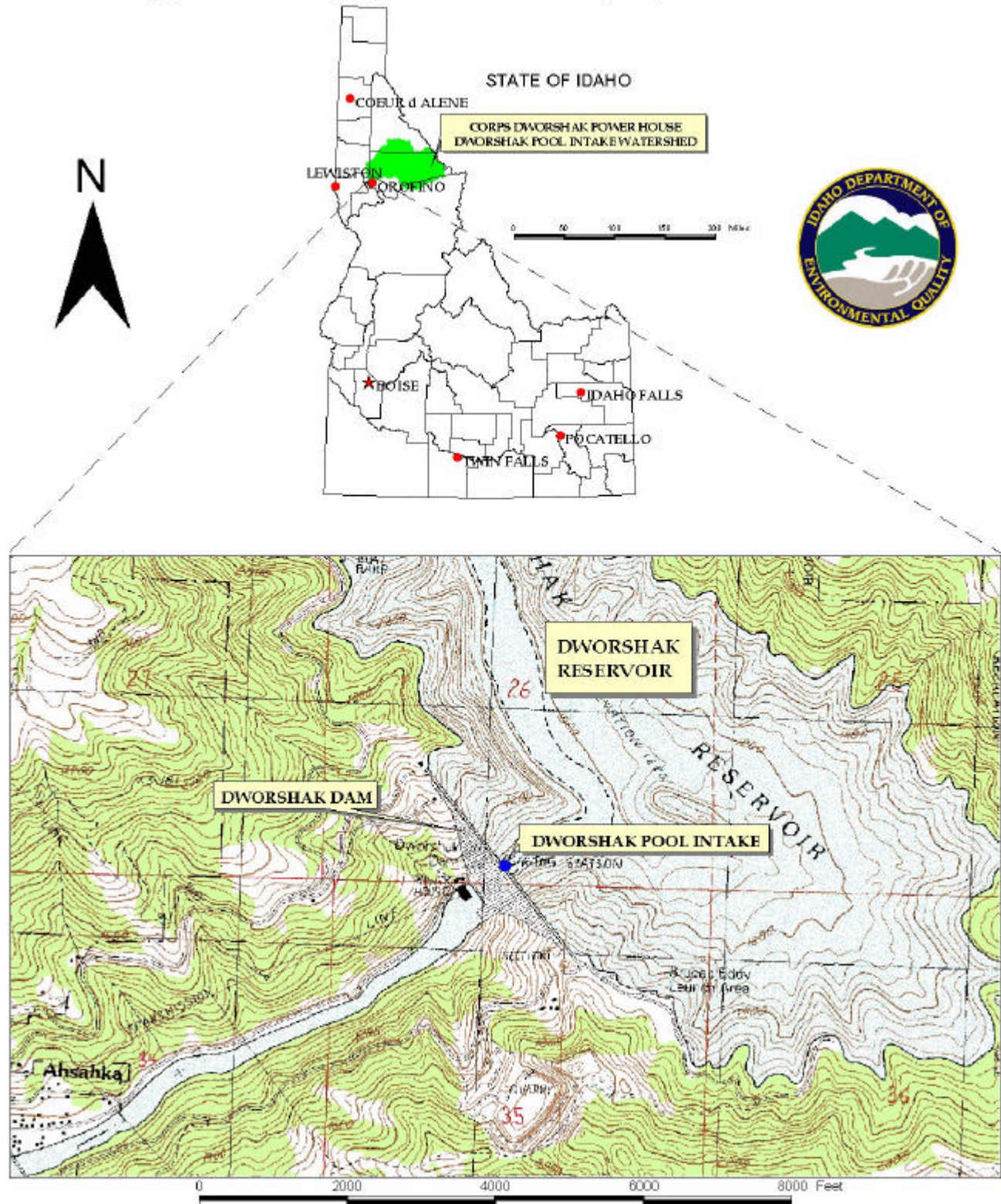
Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside the Dworshak Power House area is undeveloped timbered recreational use. Database research lists 13 inactive mining prospect sites located upstream of Dworshak Dam primarily along the North Fork of the Clearwater River and its tributaries. According to the Idaho Geological Survey, None of these sites have ever been major mine sites and none of the sites are currently being mined.

There are two roadway bridges that cross the Dworshak Reservoir located approximately 16 and 41 miles upstream of Dworshak Dam. . One bridge is paved and the other is not paved. Both bridges service

FIGURE 1. Geographic Location & Topographic Watershed Delineation for Corps Dworshak Power House View Point



relatively low volumes of traffic. The potential of a contaminant spill from these two bridges is minimal. Big Eddy Marina is located one mile upstream of Dworshak Power House and is the only facility on Dworshak Reservoir where boats are moored for extended periods of time. Big Eddy Marina has capacity for up to 100 boats and is usually full during summer months. Petrochemicals could leak or be spilled from fuel storage tanks at Big Eddy Marina or from boats moored at the marina. There are numerous recreational campsites located along Dworshak Reservoir's shoreline, but these are normally served by self-contained toilet facilities. A reservoir drawdown results in exposure of barren unvegetated shoreline that is vulnerable to storm events. Overland flow resulting from storm events on unprotected shoreline could cause considerable turbidity at the Dworshak Power House intake.

Land use within the Dworshak Power House area consists of no residential homes, small businesses, or light manufacturing. There is one public building that is used for small gatherings such as weddings but this facility does not accommodate overnight stays. This facility has a sewage collection and lift station that transfers all waste from Big Eddy into the Ahsahka Sewer System for treatment.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A contaminant inventory was conducted for Big Eddy Marina in June 2000. The process involved identifying and documenting potential contaminant sources within the Big Eddy Source Water Assessment Area through the use of computer databases and Geographic Information System maps developed by DEQ. A map showing the delineated area with the potential contaminant sources is included (figure 2).

A total of 17 potential contaminant sites are located within the delineated source water area (Table 1, Figure 2). Thirteen of the potential contaminant sources within delineated source water areas are inactive, historic mine prospects located beyond areas of immediate concern. The additional four potential contaminant sources are related to possible petrochemical spills into Dworshak Reservoir, storm water runoff during periods of reservoir drawdown and minor bacteria from recreational activity at or near Dworshak Reservoir. Table 1 lists all 17 the potential contaminant sources.



Table 1. Dworshak Power House Potential Contaminant Inventory

SITE #	Source Description	Source of Information	Potential Contaminants ¹
1	Mining Prospect	Database Research	IOC
2	Mining Prospect	Database Research	IOC
3	Mining Prospect	Database Research	IOC
4	Mining Prospect	Database Research	IOC
5	Mining Prospect	Database Research	IOC
6	Mining Prospect	Database Research	IOC
7	Mining Prospect	Database Research	IOC
8	Mining Prospect	Database Research	IOC
9	Mining Prospect	Database Research	IOC
10	Mining Prospect	Database Research	IOC
11	Mining Prospect	Database Research	IOC
12	Mining Prospect	Database Research	IOC
13	Mining Prospect	Database Research	IOC
14	Big Eddy Marina	Literature Research	Petrochemical
15	Upstream Bridge & Road	Literature Research	Petrochemical/Sediment
16	Recreational Sites	Literature Search	Bacteria
17	Exposed Shoreline	Literature Search	Sediment

¹IOC = inorganic chemical

Section 3. Susceptibility Analyses

The susceptibility of the surface water intake to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of the Dworshak Power House public water system intake directly affects the ability of the intake to protect the source from contaminants. The Dworshak Power House drinking water system consists of one intake. The intake in the Dworshak Power House system is located near the Dam face, approximately 100 feet below normal low pool elevation.

Potential Contaminant Source and Land Use

Land use within the Dworshak Power House delineation area consists of forest resource and recreation. Relative to land use, the Dworshak Power House system intake rated in the low category for the inorganic chemical class, low for volatile organic chemicals, and low for synthetic organic chemicals. Although petrochemicals are stored in boats and fuel storage tanks at Big Eddy Marina approximately 1/2-mile up-stream of this intake, the threat to drinking water quality is minimal due to the depth of the intake.

Table 2. Summary of Dworshak Power House Susceptibility Evaluation¹

Intake	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	L	L	L	L	L	L	L	L	L

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Although a database search lists 13 mines or mining prospect sites located upstream of Dworshak Dam, none of these sites have ever been major mine sites and none of the sites are currently being mined. Indications are that all 13 mine sites listed are inactive prospects that have not been disturbed for many years. These potential contaminant sources are not considered to be a threat to the Dworshak Power House drinking water intake.

There are two roadway bridges that cross the Dworshak Reservoir located approximately 16 and 41 miles upstream of Dworshak Dam. . One bridge is paved and the other is not paved. Both bridges service relatively low volumes of traffic. There is little potential for contaminant spills from these bridges to the reservoir.

Big Eddy Marina, located 1/2 mile upstream of Dworshak Power House is the only facility on Dworshak Reservoir where boats are moored for extended periods of time. Big Eddy Marina has capacity for up to 100 boats and is usually full during summer months. Petrochemicals could leak or be spilled from fuel storage tanks at Big Eddy Marina or from boats moored at the marina.

There are numerous recreational campsites located along the Dworshak Reservoir shoreline, however many have developed sanitary facilities consisting of vaulted toilets.

Reservoir drawdown results in exposure of barren unvegetated shoreline that is vulnerable to storm events. Overland flow resulting from storm events on unprotected shoreline could cause considerable turbidity at the Dworshak Power House intake.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Dworshak Power House, source water protection activities should focus on environmental education with the community, recreational users and businesses that operate within the vicinity of the delineation. Most of the delineated areas are outside the direct jurisdiction of Dworshak Power House. Due to the relatively short time involved with the movement of surface water, source water protection activities should be aimed at short-term management strategies with an emphasis on dealing with long-term future impacts from these same sources. Source water protection activities for agriculture should be coordinated with the upstream communities, the Idaho

Department of Lands, the U.S. Forest Service, and other federal, state and local agencies with lands and jurisdiction within the delineated source water area.

While the surface water sources possesses adequate quality and yield, limitations and vulnerability related to the construction of the intakes should be reviewed. An investigation of the feasibility of a shift to potential ground water sources to augment or replace the current surface water system should be considered.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: <http://www2.state.id.us/deq>

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with above-ground storage tanks

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

EPA (U.S. Environmental Protection Agency), 1997, State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water, EPA 816-R-97-008, 40p.

U.S. Government Printing Office, 1995, Code of Federal Regulations, 40 CFR 112, Appendix C-III, Calculation of the Planning Distance.

Idaho DEQ, Nov., 2000, State of Idaho, Information Management System (DWIMS).

Attachment A

Dworshak Power House Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

> 16 High Susceptibility

.. System Construction		SCORE			
Intake structure properly constructed	YES	0			
Infiltration gallery or well under the direct influence of Surface Water	NO	0			
Total System Construction Score		0			
3. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	NO				
Sources of class II or III contaminants or microbials	not present	0	0	0	0
Agricultural lands within 500 feet	NO	0	0	0	0
Three or more contaminant sources	NO	0	0	0	0
Sources of turbidity in the watershed	YES	1	1	1	1
Total Potential Contaminant Source / Land Use Score		1	1	1	1
4. Final Susceptibility Source Score		1	1	1	1
4. Final Source Ranking		Low	Low	Low	Low